REMARKS

Claim 20 has been amended to further clarify the subject matter. Support for the amendment to Claim 20 can be found, for example, from Claim 58 and page 5, lines 17-18 of the application as originally filed. Claims 20, 21, 24-30 and 32 have been amended to recite "cross country ski". Claims 23, 38-42 and 58-73 have been canceled without prejudice. No new matter is added in these amendments. Claims 20, 21, 24-30 and 32 are currently pending in the application. In view of the amendments and comments as set forth herein, Applicant respectfully requests withdrawal of the rejection and reconsideration of the pending claims.

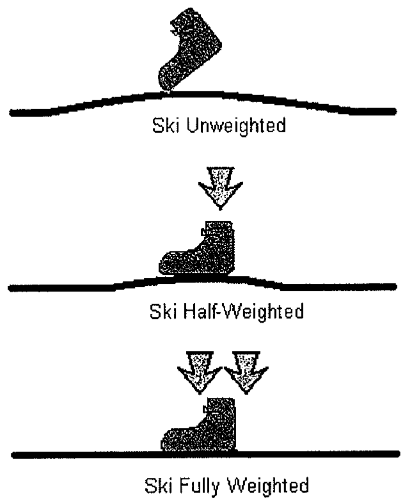
Claim rejections under 35 U.S.C § 103

The Examiner rejected Claims 20, 21, 23-30, 32, 38-42 and 58-72 under 35 U.S.C. 103(a) as being unpatentable over Szafranski et al. (US 5,338,051 A) and in further view of Bronson (U.S. 5,785,342 A).

The presently claimed invention is directed to a cross country ski. As described in the accompanying Declaration, different portions of a cross country ski bottom are used for different purposes. When traveling downhill, the center of the ski should be off the surface of the snow, and the skier should be gliding on the frontward and rearward portion of the ski. When traveling uphill, the center of the ski should make contact with the surface of the snow for traction in pushing the skier uphill.

In order to provide the above described behavior during skiing, the ski is generally shaped in an arc form. For instant illustration of this configuration, the following image is provided (obtained and modified from http://www.omerandbobs.com/info%20center/winter%20faq/generalstuff3.html; also attached as Appendix A).

Image 1



As seen in the above Image 1, the cross country ski is generally provided with a camber, such that the center of the ski is raised from the surface of the snow in the absence of body weight. The skis are designed such that when half the skier's body weight is on each ski for gliding, the center of the ski is still slightly off the snow. When the skier pushes down and against the snow when kicking uphill, putting 100% or more weight on a given ski at a time, the center of ski comes into solid contact with the snow.

In general, the foregoing behaviors of the ski during gliding and kicking are affected by the presence of the binding plate on the ski. It is important to maintain the behaviors as much as possible, as if the binding plate was not present. The binding plate is generally fastened to the top face of the ski body and the materials and methods used in the fastening process could have appreciable effects on the properties of the ski. However, it is ideal if the fastening of the binding plate would have no or minimal influence to the ski and thereby lead to the maximum performance during skiing.

A ski according to Claim 20 requires that the binding plate be bonded, without screws or welding, over its whole surface with adhesive to the top face of the ski. The adhesive comprises a layer having a maximum thickness of 5 to 10% of a thickness of the binding plate, wherein said ski and said binding plate form an integral constructional unit in respect of mechanical properties with no damping volumes between the binding plate and the ski.

With the foregoing configurations in Claim 20, there is almost no influence exerted from this reinforcement of the binding plate to the cross country ski, which leads to a superior running performance of the ski. In the accompanying Declaration, Applicant provides experimental evidence showing that a ski according to the invention behaves very similar to the one without a binding plate. The Declaration illustrates the overall behavior profiles of a ski without a binding plate and a ski with a binding plate according to the presently claimed invention, respectively. These profiles are highly comparable and the difference between each data set is very small. These data prove that a binding plate according to the presently claimed invention indeed has almost no effect to the ski properties, and thereby allows the ski to behave like the one without a binding plate.

The foregoing technical feature of the ski according to the invention was proven to play a critical role, especially in ski competitions. As also described in the Declaration, 82.5% of the medals during the 2010 Olympic Games in Vancouver won in cross country ski events were won with athletes using the binding plate of the invention (referred to as the NIS plate). This data clearly demonstrates that the ski device of the invention provides significant technical benefits and thus allows superior performance of the ski which cannot be achieved with conventional binding plates.

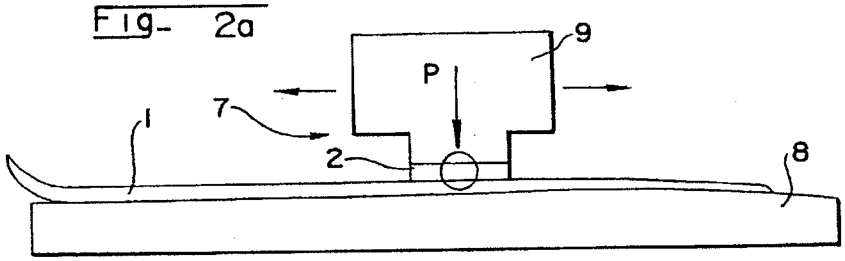
Applicant respectfully submits that Szafranski and Bronson disclose a process and device that are unable to achieve the foregoing configuration and its resulting technical benefits. Accordingly, the device according to the pending claims cannot be obvious over the prior art.

Szafranski teaches a method of attaching an element (e.g. a binding plate) to a sliding apparatus (e.g. ski) via a friction welding technique. This process provides for a layer of thermofusible material to be placed on the respective attachment surfaces of the binding plate and the ski. The two layers of heat-meltable material in contact with one another are melted by heat, which is caused by friction, and thereby welded to each other.

The foregoing process of friction welding is conducted by a vibrational welding apparatus which is disclosed in Figure 2a of Szafranski. This Figure 2a is reproduced herein.

Figure 2a of Szafranski

Fig- 2a



During the welding process, the ski 1 is immobilized on the lower fixed plate 8. To induce the heat by friction, the upper movable plate 9 is vibrated longitudinally and the vertical pressure P is exerted as shown above to the ski 1. The pressure P is created by a substantially high vertical pressure force of 600 to 800 decaNewtons (i.e. about 611 to 815 kg/force) and maintained up to five seconds. *See* column 5, lines 1-9 and column 6, lines 6-10 of Szafranski.

It is necessary to press the ski with a relatively high pressure in order to weld the binding plate to the ski according to Szafranski. As a result, the ski would be mostly flattened, if not completely, and the vertical curvature of the ski would be significantly reduced during the welding process as disclosed in the prior art. As demonstrated above, this flattening of the ski is highly undesirable and would provide a negative influence to ski performance. Therefore, with such a deformation in the ski configuration, it would be impossible for the ski according to Szafranski to achieve a comparable performance to those with a curvature maintained as in Claim 20. Accordingly, the prior art does not possibly teach or suggest the ski configuration and the benefits as described in Claim 20.

In addition, Szafranski fails to teach the features of Claim 20, which include that the adhesive comprises a layer having a maximum thickness of 5 to 10% of a thickness of the binding plate, wherein said ski and said binding plate form an integral constructional unit in respect of mechanical properties with no damping volumes between the binding plate and the ski. As demonstrated previously, it would be desirable if the binding exerts as low influence as possible to the ski. To minimize the impact to the ski from the binding, the ski according to Claim 20 utilizes a small amount of adhesive, more particularly, that the maximum thickness of the adhesive layer is 5 to 10% of a thickness of the binding plate. The cited thickness of the adhesive is extremely thin and thus it does not define any damping volume. *See* page 4, lines 17-

18 of the originally filed application. With this configuration, the Applicant's ski would receive almost no influence from the binding on its properties including thermal expansion, tensile strength, flexural strength and torsional rigidity of the ski. Applicant further proved in the Declaration that the ski according to the present application indeed acts as if there is no binding plate.

However, Szafranski's ski device comprises a damping volume, which would interfere with the ski properties. In Szafranski, a thermofusible material such as polyamide is present on each of the ski and the binding plate and welded to each other. Therefore, after the assembly, a thick layer of polyamide remains between the ski and the binding plate and likely constitutes a damping layer. There is no disclosure related to the amount of polyamide for this welding in Szafranski; and thus the range of polyamide amount is very broad in view of the prior art. Therefore, polyamide with its thickness more than 5 to 10% of a thickness of the binding plate is certainly suggested in Szafranski and this would provide a damping volume to the ski. In such a case, the ski properties would be affected by the damping volume and consequently the ski performance would be changed. This further confirms that the ski according to Szafranski is unable to achieve the characteristics present in the ski of Claim 20.

In addition, Szafranski's welding process would be ususeable for cross country skis due to its potential damage to the ski. As noted above, Szafranski requires a welding process to attach the binding plate to the ski. For this purpose, a substantial amount of heat generated by friction is provided to melt and weld the polyamide. If the preferred polyamide "RILSAN" is used in the welding, the temperature to melt the polyamide should be at least about 180 °C. *See* the attached Appendix B. In general, a cross country ski comprises a base element and a thin layer less than 1 mm thick which covers the base element. The base element can be made of metal, wood or synthetic materials and the covering layer can be made of a variety of plastic materials. If the method of Szafranski were used with a cross country ski, the friction would burn through this layer on which the binding plate is applied. Not only the layer but also the base element would be damaged during the welding process. Accordingly, Applicant believes that the welding process as taught by Szafranski would not be practical to be applied to the binding

process of the cross country ski and for the same reasons it would not be desired by any one with ordinary skill in the art.

For at least these reasons, Szafranski does not disclose or suggest the invention of Applicant's Claim 20. With regard to Bronson, it does not add anything that would cure the foregoing deficiencies of Szafranski.

Bronson teaches an assembly of a damping material between a binding plate and a ski. *See* column 1, lines 62-64 of Bronson. Accordingly, it is readily clear that Bronson cannot teach the ski of Claim 20 in which there is no damping material between the binding plate and the ski. Further, the assembly mechanism which requires bolts and screws in Bronson exerts substantial effects to the ski behaviors, which are not present in the ski according to the pending claims. As expressly disclosed in the subject application as originally filed (e.g. line 7 of the second paragraph, page 1 to line 4, page 2 of the present application as filed), fastening the binding plate to a ski via screws has an appreciable influence on the flexural strength and torsional rigidity of the ski, on the one hand, and on the flexibility of the ski, on the other hand. In addition, the weight of the ski is increased, and this would also contribute to the variation of ski performance. Applicant herein further provides experimental data proving that the assembly with screws indeed significantly changes the camber deflection profile. *See* Figure 3 of Appendix A and related description in the Declaration. Therefore, it is clear that Bronson also fails to teach or suggest the ski as described in Claim 20, either alone or in combination with Szafranski.

In view of the foregoing, Applicant respectfully submits that Claim 20 is not obvious over the prior art and therefore should be in condition for allowance. As to Claims 21, 24-30 and 32, they incorporate all the features that Claim 20 has through their dependencies from Claim 20. Accordingly, these dependent claims should also be allowable for at least the same reasons that Claim 20 is allowable as well as for their own patentable features. Withdrawal of the rejection and consideration of the pending Claims 20, 21, 24-30 are respectfully requested. As Claims 23, 38-42 and 58-73 have been canceled, the rejection of these claims is now moot.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Applicant wishes to draw the Examiner's attention to the following co-pending utility applications of the same inventor.

Serial Number	Title	Filed
11/813,610	SKI, OR SIMILAR DEVICE FOR SLIDING ON SNOW, HAVING A MOUNTING AID FOR A BINDING	August 21, 2007

CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, arguments in support of the patentability of the pending claim set are presented above.

In light of the above remarks, reconsideration and withdrawal of the outstanding rejections is respectfully requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Application No.: 10/535,619
Filing Date: January 4, 2006

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9/17/10

By:

Thomas R. Arno
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APPENDIX A

INFO CENTER

Bike:

Johnny's 10 Bike Tips

Local MTB Rides

Ski & Board:

How-To Waxing Guide

Winter Ski/Board F.A.Q.

06-07 Ski Gallery

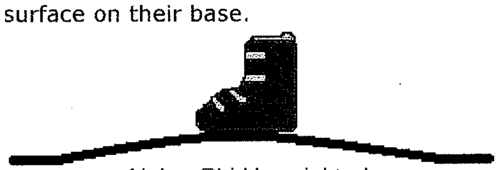
Winter Frequently Asked Questions

back

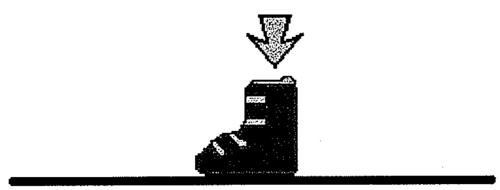
Single camber, double camber, alpine and nordic camber—what all about?

Skis and snowboards are not flat, rather, they arch like back of a cat getting scrat Camber refers to the upward curvature that is built into the body of a ski or snowt is most easily seen when the ski is placed base down on a flat surface; notice the convexity that peaks underneath the binding system. Convinced? There are but tw categories of this phenomenon: **Double camber** and **single camber**.

A **single camber** ski is defined by the one continuous arc that runs through its bo you placed two such skis base to base, it would take one even pressure from your to close the entire gap. As the skier begins the descent, both skis are weighted, compressing the camber and allowing the full length of base and edge to contact t snow. This characteristic translates into turning power and stability. Alpine, telema and snowboards all are shining examples of the wonders of single camber. Nordic skis also fall into this category, as they lack a wax pocket and have a full-length gl surface on their base.



Alpine Ski Unweighted



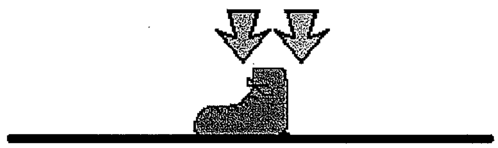
Alpine Ski Half or Fully Weighted

A **double camber** ski has a second, stiffer camber layered over the first that stret across the middle third of the base. Classical nordic skis are built like this, alternat termed "nordic camber" and "camber-and-a-half." Place two of these bases togeth it takes one pressure to close the first camber, and a much harder pressure to clos second and completely flatten them out. When a nordic skier evenly weights both in a descent), their distributed mass is not enough to compress the second cambe is where the kick wax is applied, or where the waxless grip pattern is etched onto skis), so the kick zone remains above the snow and the skier glides merrily along.

terrain, the skier is alternatively weighting one ski at a time while striding and glid
The skier's entire weight is enough to flatten the kick zone of one ski against the s
allowing her to push off and glide.

Nordic Ski Unweighted

Nordic Ski Half-Weighted



Nordic Ski Fully Weighted

The term **flex** is used to describe the stiffness of a ski's camber. A soft-flexing clas
nordic ski will allow lots of grip because the kick zone is more easily compressed, l
more advanced skiers usually enjoy a harder flex. More technique is required to ac
grip but because less of the kick zone drags in the snow during the glide phase, th
will be faster. With single camber skis, a soft flex usually translates into better floa
in powder at the expense of reliable edge grip on hardpack. Thus, some fat-waiste
powder boards can have a flex that feels like a "wet noodle," compared to the sup
feel of those designed to carve turns and hold an edge on the slickest of New Engl

back

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APPENDIX B

Search or

Dokument E4

Rilsan

Home
Product Info
Key Properties (Metric Units)
Key Properties (English Units)
Applications
Literature
News
Events
Contact

Key Properties (Metric Units)

- Rigid Grades
- Semi-Flexible Grades
- Flexible Grades
- Glass-Filled Grades
- Fiber-Reinforced Grades
- Conductive Grades

More information

Rilsan® HT
Rilsan® Polyamide 12
Rilsan® Clear Polyamides
Rilperm® Multilayer Fuel Technology
Rilsan® Polyamides in North America

Rigid Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Example Grades	BESNO BESVOA BESVO TL BESN Blk TL BMNO BMNO TL BMV Blk T	AESNO AESNO TL AESN Blk TL AMNO AMNO TL AMN Blk T6LD
Melting Point, °C	183-190	174-180
Specific Gravity	1.02-1.03	1.01
Tensile Strength at Break, Mpa	37-58	56-69
Tensile Elongation at Break, %	225-355	250-390
Flexural Modulus, Mpa	1090-1150	1100-1260
Hardness, Shore D	64-72	68-72
Charpy Impact, kJ/m² Notched		
23° C	7-15	5-15
-30° C	10-13	5-8

Contact us for exact product specs

Semi-Flexible Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Example Grades	BESNO P20 TL BESN P20 Blk TL	AESN P202 Blk T6LD AESNO P10 TL AESN P210 Blk TL
Melting Point, °C	179-187	171-178
Specific Gravity	1.04	1.02-1.03
Tensile Strength at Break, Mpa	47-50	49-58
Tensile Elongation at Break, %	245-335	250-370
Flexural Modulus, Mpa	420-490	390-550
Hardness, Shore D	62-64	61-64
Charpy Impact, kJ/m² Notched		
23° C	37-49	14-NC
-30° C	7-10	3-7

Contact us for exact product specs .

Flexible Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Example Grades	BESNO P40 BESNO P40 TL BESN P40 Blk TL BMNO P40 TL	AESNO P40 AESNO P40 TL AESN P40 Blk TL AMNO P40 TL
Melting Point, °C	175-185	168-176
Specific Gravity	1.03-1.05	1.01-1.04
Tensile Strength at Break, Mpa	43-59	50-56
Tensile Elongation at Break, %	225-405	300-340
Flexural Modulus, Mpa	290-350	360-400
Hardness, Shore D	69-63	63
Charpy Impact, kJ/m² Notched		
23° C	NC	25-NC
-30° C	6-7	4-5

Contact us for exact product specs

Glass-Filled Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Example Grades	BZM 23 G9	AZM 23 T6LD AZM 30 Blk T6LD
Melting Point, °C	183-193	174-181
Specific Gravity	1.07-1.26	1.01-1.41
Tensile Strength at Break, Mpa	54-136	72-145
Tensile Elongation at Break, %	3-25	4-8
Flexural Modulus, Mpa	1600-9700	3000-9000
Hardness, Shore D	73-115	70-80
Charpy Impact, kJ/m² Notched		
23° C	11-21	10-23
-30° C	7-12	7-17

Contact us for exact product specs

Fiber-Reinforced Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Melting Point, °C	188-190	174-178
Specific Gravity	1.2	1.2-1.4
Tensile Strength at Break, Mpa	31	37-50
Tensile Elongation at Break, %	40	30-40
Flexural Modulus, Mpa	1600	1750-2000
Hardness, Shore D	72	70-80
Charpy Impact, kJ/m² Notched		
23° C	6	6-6
-30° C	5	4-5

Contact us for exact product specs

Conductive Grades

Physical Properties	Rilsan® PA11	Rilsan® PA12
Example Grades	M-BESN Blk P212 CTL	AESN Blk P212 CTL
Melting Point, °C	185-187	176-178
Specific Gravity	1.13	1.14

e Strength at Break, MPa	37	39
e Elongation at Break, %	180-190	180-190
al Modulus, Mpa	575	740
ıess, Shore D	64	71
y Impact, kJ/m²	44	45
ed	8	7

Contact us for exact product specs.